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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/766,044	01/19/2001	Melvin N. Miller	7420-061-999	9617

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EXAMINER
DONOVAN, LINCOLN D

ART UNIT	PAPER NUMBER
2832	

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/766,044	Miller et al.
Examiner	**Art Unit**
Lincoln Donovan	2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jul 14, 2003* .

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-18 and 43-64* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-18 and 43-64* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-14 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beer [US 4,703,276] in view of Yamaguchi et al. [US 4,931,760].

Beer discloses a magnet assembly [11] for an NMR system comprising: at least four pairs of wedge-shaped magnets [figure 1] arranged to surround a tubular volume of space and provide in at least a portion of the surrounded volume a cylindrically shaped *substantially* homogeneous magnetic field [column 2, lines 62-64], the magnets of each pair being disposed diametrically opposite each other with respect to the surrounded volume with magnetization directions having *substantially* the same orientation [figure 1] and adjacent magnets of the assembly being separated by gaps.

Beer disclose the instant claimed invention except for: the magnet assembly being used in an MRI system.

Yamaguchi et al. disclose a magnet arrangement for an MRI system comprising pairs of magnets surrounding a volume to from a uniform field therein.

It would have been obvious to one having ordinary skill in the art at the time the invention was made that the magnet arrangement of Beer could have been used in an MRI system, as suggested by Yamaguchi et al., for the purpose of controlling the field inside the surrounded volume.

The specific permeability of the magnets used for the imaging system would have been an obvious design consideration based on the desired magnetic field strength.

Both Beer and Yamaguchi et al. disclose the magnets being separated from each other and would inherently have a non-homogeneous, or heterogeneous, magnetic field produced in the gap therebetween.

The specific spacing of the magnets and angular displacement would have been an obvious design consideration based on the number of magnet pairs used and the desired field to be produced thereby.

Beer shows the magnets arranged in the claimed orientations.

3. Claims 15, 43-19 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beer in view of Yamaguchi et al. as applied to claim 1 above, and further in view of Miyata [US 5,148,138].

Beer, as modified, disclose the instant claimed invention except for: the number of magnet pairs being greater than 2.

Miyata discloses a cylindrical magnet apparatus having at least 6 magnet pairs.

To have 6, or more, magnet pairs used within the system would have been an obvious design consideration based on the desired sensitivity and strength of the magnetic field to be produced, as

suggested by Miyata. It would have been obvious, it order to maintain the homogeneous field to adjust the field orientation in accordance with the number of magnets used in the system.

4. Claims 18 and 50-61 and 63-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beer in view of Yamaguchi et al. as applied to claims 1-17 above, and further in view of Toyoshima et al. [US 4,727,327].

Beer, as modified, disclose the instant claimed invention except for: a ring surrounding the magnets.

Toyoshima et al. disclose a ring structure [37] surrounding the magnets.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a ring structure in the magnet arrangement of Beer, as modified, as suggested by Toyoshima et al., for the purpose of providing adjustment of the magnetic field within the surrounded volume.

Response to Arguments

5. Applicant's arguments filed 07-14-03 have been fully considered but they are not persuasive.

Applicant argues:

[1]: The prior art does not teach or suggest the use of gaps between the adjacent magnets to permit magnetic flux between the adjacent magnets to *substantially* extend into the region surrounded by the magnets.

[2]: The prior art does not teach or suggest the use of a high permeability ring disposed around the magnets.

Examiner disagrees:

Regarding [1], Beer discloses a gap extending between each of the adjacent magnets [figure 1]. Beer does not preclude the flux between the adjacent magnets from extending within the gap therebetween.

Regarding [2]: Toyoshima et al. discloses the use of a high permeability ring surrounding the magnets.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Lincoln Donovan whose telephone number is (703) 308-3111.

The fax number for this Group is (703)-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1782.

LDD

September 3, 2003

LINCOLN DONOVAN
PRIMARY EXAMINER
GROUP 2100